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|---|---|
| ZERVIGON, RUDY | |
| **ART UNIT** | **PAPER NUMBER** |
| 1763 | |

DATE MAILED: 10/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/715,628 | DERDERIAN ET AL. | |
| | Examiner | Art Unit | |
| | Rudy Zervigon | 1763 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *18 August 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 November 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/18/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "dispersion head" must be shown or the features canceled from the claims. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 102/103*

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-3, 5-11, and 17 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Gadgil; Prasad N. (US 5284519 A) in view of (if necessary) Lee; Chung J. et al. (US 6,086,679 A). Gadgil teaches a deposition system (Figure 1,2,18; column 3, lines 30-60) comprising: a deposition chamber (2; Figure 18; column 3, lines 30-60) having an inlet port (bottom of 38; Figure 2; column 4, lines 1-15); a first reservoir (44; Figure 2; column 5; lines 1-15) external (10; Figure 1 appears to be 38; Figure 2) to the deposition chamber (2; Figure 18; column 3, lines 30-60) configured for containment of a first metastable specie, the first reservoir (44; Figure 2; column 5; lines 1-15) comprising an outlet port (top of 38; Figure 2; column 5; lines 1-15) in selective fluid communication with the inlet port (bottom of 38; Figure 2; column 4, lines 1-15) of the deposition chamber (2; Figure 18; column 3, lines 30-60) – claim 1. Applicant's claim 1 requirement of "a metastable-specie generating catalyst within the first reservoir ", as claimed by claim 1 is a claim requirement of intended use.

Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey,152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

Gadgil further teaches the deposition system (Figure 1,2,18; column 3, lines 30-60) of claim 1 further comprising: a substrate platform (16; Figure 1); and a dispersion head (12; Figure 1)

between the inlet port (bottom of 38; Figure 2; column 4, lines 1-15) and the substrate platform (16; Figure 1), as claimed by claim 6

Gadgil further teaches:

i. Gadgil's deposition system (Figure 1,2,18; column 3, lines 30-60) of claim 1 further comprising: a second reservoir (40; Figure 2; column 3, lines 30-60) configured for containment of a second metastable specie, the second reservoir (40; Figure 2; column 3, lines 30-60) comprising a second reservoir (40; Figure 2; column 3, lines 30-60) outlet port (34; Figure 2) in selective fluid communication with Gadgil's deposition chamber (2; Figure 18; column 3, lines 30-60), as claimed by claim 7

ii. Gadgil's deposition system (Figure 1,2,18; column 3, lines 30-60) of claim 7 wherein Gadgil's inlet port (bottom of 38; Figure 2; column 4, lines 1-15) of Gadgil's deposition chamber (2; Figure 18; column 3, lines 30-60) is a first inlet port (bottom of 38; Figure 2; column 4, lines 1-15), Gadgil's deposition chamber (2; Figure 18; column 3, lines 30-60) further comprising a second inlet port (32), wherein the outlet port (top of 38; Figure 2; column 5; lines 1-15) of the second reservoir (40; Figure 2; column 3, lines 30-60) is in selective fluid communication with Gadgil's deposition chamber (2; Figure 18; column 3, lines 30-60) through the second inlet port, as claimed by claim 8

iii. Gadgil's deposition system (Figure 1,2,18; column 3, lines 30-60) of claim 7 wherein Gadgil's metastable-specie generating catalyst is a first metastable-specie generating catalyst, and further comprising a second metastable-specie generating catalyst within the second reservoir (40; Figure 2; column 3, lines 30-60), as claimed by claim 9

iv. An atomic layer deposition apparatus comprising: a deposition chamber (2; Figure 18; column 3, lines 30-60) having a first inlet (bottom of 38; Figure 2; column 4, lines 1-15), a second inlet (32), a dispersion head (32; Figure 2), and a substrate platform (16; Figure 2); Gadgil's dispersion head (32; Figure 2) being positioned between Gadgil's first inlet (bottom of 38; Figure 2; column 4, lines 1-15) and Gadgil's substrate platform (16; Figure 2) and between the second inlet (32) and Gadgil's substrate platform (16; Figure 2); a first activated specie containment reservoir (40; Figure 2) disposed external (10; Figure 1 appears to be 38; Figure 2) to the deposition chamber (2; Figure 18; column 3, lines 30-60), in fluid communication with Gadgil's deposition chamber (2; Figure 18; column 3, lines 30-60) through Gadgil's first inlet (bottom of 38; Figure 2; column 4, lines 1-15); a second activated specie containment reservoir (44; Figure 2) disposed external (10; Figure 1 appears to be 38; Figure 2) to the deposition chamber (2; Figure 18; column 3, lines 30-60), in fluid communication with Gadgil's deposition chamber (2; Figure 18; column 3, lines 30-60) through the second inlet (32); and one or more carrier gas sources configured to deliver carrier gas through at least one of Gadgil's first inlet (bottom of 38; Figure 2; column 4, lines 1-15) and the second inlet (32), as claimed by claim 17. Applicant's claim requirement of "An atomic layer deposition apparatus" is a claim requirement of intended use. Additionally, when the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01). Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the

scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey,152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

Gadgil does not teach:

i. The deposition system (Figure 1,2,18; column 3, lines 30-60) of claim 1 wherein the catalyst comprises Pt, as claimed by claim 2

ii. The deposition system (Figure 1,2,18; column 3, lines 30-60) of claim 1 wherein the catalyst comprises Zn, as claimed by claim 3

iii. The deposition system (Figure 1,2,18; column 3, lines 30-60) of claim 1 further comprising a carrier gas source in selective fluid communication with the deposition chamber (2; Figure 18; column 3, lines 30-60) through the inlet port (bottom of 38; Figure 2; column 4, lines 1-15), as claimed by claim 5. Applicant's claim requirement of a gas identity being a "carrier gas" is a claim requirement of intended use. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is

capable of performing the intended use, then it meets the claim (In re Casey,152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

iv. Gadgil's deposition system (Figure 1,2,18; column 3, lines 30-60) of claim 7 further comprising a carrier gas source in selective fluid communication with Gadgil's deposition chamber (2; Figure 18; column 3, lines 30-60) through the second inlet port, as claimed by claim 10 – However, applicant's claim requirements of gas identity as "carrier gas" does not further limit applicant's pending apparatus claims. Intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey,152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

v. Gadgil's deposition system (Figure 1,2,18; column 3, lines 30-60) of claim 7 further comprising: the remote metastable specie source, wherein the second reservoir (40; Figure 2; column 3, lines 30-60) comprises an inlet port (34; Figure 2) in fluid communication with a remote metastable specie source, as claimed by claim 11

Lee teaches:

i. The deposition system (Figure 5; column 14; lines 24-50) of claim 1 wherein the catalyst (528; Figure 5; column 14; lines 24-50) comprises Pt (column 19; lines 33-41), as claimed by claim 2

ii. The deposition system (Figure 5; column 14; lines 24-50) of claim 1 wherein the catalyst (528; Figure 5; column 14; lines 24-50) comprises Zn (column 19; lines 33-41), as claimed by claim 3

iii. The deposition system (Figure 5; column 14; lines 24-50) of claim 1 further comprising a carrier gas source in selective fluid communication with the deposition chamber (520; Figure 5; column 14; lines 24-50) through the inlet port (516; Figure 5; column 14; lines 24-50), as claimed by claim 5. Applicant's claim requirement of a gas identity being a "carrier gas" is a claim requirement of intended use. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey,152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

In the event that Gadgil's apparatus is not deemed to anticipate the pending apparatus claims of the present application, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add Lee's precursor materials to Gadgil's reservoirs.

Motivation to add Lee's precursor materials to Gadgil's reservoirs is for creating polymer thin films as taught by Lee (column 1; lines 25-33).

### *Claim Rejections - 35 USC § 103*

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 4, and 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gadgil; Prasad N. (US 5284519 A) in view of (if necessary) Lee; Chung J. et al. (US 6,086,679 A). Gadgil is dicussed above.

Gadgil does not teach:

i. The deposition system (Figure 1,2,18; column 3, lines 30-60) of claim 1 further comprising a heat source configured to heat the catalyst , as claimed by claim 4

ii. Gadgil's deposition system (Figure 1,2,18; column 3, lines 30-60) of claim 11 wherein Gadgil's remote metastable specie source comprises a metastable specie generator comprising one or more of a plasma sorce, a catalyst, a heater, an electron gun, a UV light source and a microwave source, as claimed by claim 12

iii. A deposition apparatus comprising: a deposition chamber (2; Figure 18; column 3, lines 30-60) having a first volume (2; Figure 1); at least one containment reservoir (44, 40; Figure 2) disposed external (10; Figure 1 appears to be 38; Figure 2) to the deposition chamber (2; Figure 18; column 3, lines 30-60), fluidly connected to Gadgil's deposition chamber (2; Figure 18; column 3, lines 30-60) and having a second volume (34; Figure 2), Gadgil's second volume (34; Figure 2) being at least about 1% of Gadgil's first volume (2; Figure 1); a remote metastable specie source in fluid communication with at least one of the containment reservoirs (44, 40; Figure 2), as claimed by claim 13

iv. The apparatus of claim 13 wherein the second volume (34; Figure 2) is greater than or equal to about 10% of Gadgil's first volume (2; Figure 1), as claimed by claim 14

v. The apparatus of claim 13 wherein Gadgil's second volume (34; Figure 2) is greater than or equal to about 50% of Gadgil's first volume (2; Figure 1), as claimed by claim 15

vi. The apparatus of claim 13 wherein Gadgil's second volume (34; Figure 2) is equal to or greater than Gadgil's first volume (2; Figure 1), as claimed by claim 16

Lee teaches the deposition system (Figure 5; column 14; lines 24-50) of claim 1 further comprising a heat source (532; Figure 5) configured to heat the catalyst (528; Figure 5; column 14; lines 24-50), as claimed by claim 4

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Lee's heat source and to reproduce Gadgil's reservoirs and inlet ports under optimial relative dimensions.

Motivation to add Lee's heat source and to reproduce Gadgil's reservoirs and inlet ports under optimial relative dimensions is for for creating polymer thin films as taught by Lee (column 1; lines 25-33) and increasing processing speed and throughput, respectively. Further it is well established that changes in apparatus dimensions are within the level of ordinary skill in the art.(Gardner v. TEC Systems, Inc. , 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied , 469 U.S. 830, 225 USPQ 232 (1984); In re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04)

***Response to Arguments***

6. With respect to the Examiner's drawing objections, Applicant believes the claimed "dispersion head" is in 1-to-1 correspondance with "disperser 28". The Examiner disagrees.

7. Applicant's arguments in support of the drawings are not convincing. The Examiner requests a 1-to-1 correspondance with what is claimed and elements in the specification in support of the drawings.

8. Applicant states:

“

Applicant notes however, that Fig. 2 and Fig. 1 are entirely distinct embodiments and as such are non-combinable.

“

Applicant is correct only to the extent that the nozzle 30 (all elements in Figure 2) is a second embodiment of nozzle 10, Figure 1. In other words, the Examiner's interpritation of Gadgil is that the nozzle structure in Figure 1 is replaced by the detailed embodiment shown in Figure 2. As such, the Examiner (and Gadgil) is not attempting to "combine" embodiments but simply recognizes the entirety of Gadgil's teachings encompassing alternative structure for a single component in "embodiment" 1, Figure 1. It is well accepted by Gadgil and many patent references that a reproduction of elements between Figures acts to detract from the details an inventor is conveying as critical to a concept. Gadgil does exactly this. It is understood that Figure 1 elements 12, 14, 22, 28...and above (not 10 and below) are inherently present in Figure 2.

9. Applicant requests withdrawal of the Examiner's above positions concerning intended use claim requirements. The Examiner refuses. *All* of the Examiner's cited intended use claim requirements do not further limit, structurally, the pending apparatus claims. A “ metastable-specie generating catalyst” *is not* part of "the first reservoir" or any other positively recited structure.

10. Applicant disagrees with the Examiner's equivalents for the claimed inlet and outlet ports. However, the Examiner is guided by Applicant's own definitions for these elements. Applicant's inlet ports (16, 34; Sole Figure) and outlet ports (18, 32; Sole Figure) are simply

starting points and ending points traversing a single piece 52. Likewise Gadgil's inlet port (bottom of 38; Figure 2; column 4, lines 1-15) and outlet port (top of 38; Figure 2; column 5; lines 1-15) are simply starting points and ending points traversing a single piece 38; Figure 2.

11. Concerning "containment" and "selective":

Gadgil was cited as teacing a first reservoir (44; Figure 2; column 5; lines 1-15) external (10; Figure 1 appears to be 38; Figure 2) to the deposition chamber (2; Figure 18; column 3, lines 30-60) configured for containment. In other words, Gadgil's gas is contained.

Gadgil was cited as teacing an outlet port (top of 38; Figure 2; column 5; lines 1-15) in selective fluid communication with the inlet port (bottom of 38; Figure 2; column 4, lines 1-15) of the deposition chamber (2; Figure 18; column 3, lines 30-60). Process gas is transmitted selectively through passages of 38. The Examiner conceeds Gadgil does not teach Applicant's selective valve 48.

***Conclusion***

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.